



PATENT ABSTRACTS OF JAPAN

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(57) Abstract:

PURPOSE: To obtain a piston ring excellent in abrasion resistance and initial conformability by setting the average particle size of silicon carbide in an upper composite plating layer to within the range of 0.2 to $3\mu\text{m}$, and using a layer in which particles of average size 0.2 to $3\mu\text{m}$ are mixed with those of average size 5 to $15\mu\text{m}$ as a lower composite plating layer located beneath the upper layer.

CONSTITUTION: A composite plating film 5 having silicon carbide 3 of average particle size $1\mu\text{m}$ and silicon carbide 2 of average particle size $10\mu\text{m}$ dispersed in a matrix of a nickel-phosphorous alloy 4 and deposited as eutectoid materials is formed by electrodeless plating into a thickness of $30\mu\text{m}$ on the surface of a base member 1 and the base member 1 is then filtrated through plating bath to form a composite plating layer 6 of thickness $5\mu\text{m}$ including only the silicon carbide 3 of average particle size $1\mu\text{m}$. The base member 1 is then heated at 400°C in a heat treatment furnace so that the adhesion property of the silicon carbide to the matrix on the surface of the base is strengthened, the silicon carbide having hardness as high as Hv 1000 and serving as an eutectoid material. The base member is then

surface finished by wrapping to provide a smooth surface having a center-line average roughness Ra of $0.06\mu\text{m}$ or less.

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